

## CLIMATOLOGICAL DATA FOR MAY, 1911.

## DISTRICT No. 4, THE LAKE REGION.

Prof. HENRY J. COX, District Editor.

## GENERAL SUMMARY.

The month of May, 1911, in climatological district No 4 was characterized by mean temperatures decidedly above the normal, by an abundance of sunshine and a deficiency of precipitation over the southern and eastern sections, and by an excess of precipitation over the northern and western sections. The heat was unprecedented in many localities. In fact, not only were the records for high mean May temperatures broken in most portions of the district, but the records of recent years for midsummer maximum temperatures were exceeded in several instances. In southern Michigan and the lower Lake region conditions were favorable for the rapid evaporation of water from the surface of the soil, owing to the great number of clear and partly cloudy days with high temperatures, which, together with the deficiency in rainfall over these sections, resulted during the last two weeks of the month in a situation bordering on drought, especially in northern Indiana, northern Ohio, and the extreme eastern portion of the district. The rains of the last day of the month, however, afforded considerable relief.

Thunder showers were frequent during the periods of maximum heat, and a number of these storms caused extensive destruction of property and loss of life by lightning, and other damage of greater or less extent, due to accompanying high winds and excessive rainfall. The reports show marked coincidences of the occurrence of thunderstorms and rainfall with the culmination of the heat periods. The following table summarizes the chief features of meteorological interest in the various portions of the district:

Portions of States lying within district No. 4.	Mean.								Prevailing wind direction.	
	Temperature.	Departure from normal.	Precipitation.	Departure from normal.	Snowfall.	Number of days.				
						0.01 Inch or more precipitation.	Clear.	Partly cloudy.	Cloudy.	
Minnesota.....	53.2	+3.8	3.52	+0.07	T.	9	12	11	8	ne. sw.
Wisconsin.....	58.2	+5.3	4.32	+0.68	2.2	11	15	9	7	sw.
Illinois.....	66.0	+9.5	3.37	-0.00	0.1	12	13	10	8	sw.
Indiana.....	66.6	+6.3	2.14	-1.78	T.	8	19	6	6	sw.
Upper Michigan.....	53.8	+5.6	3.90	+0.72	0.9	11	13	8	10	w.
Lower Michigan.....	61.8	+6.3	3.64	+0.27	0.2	9	15	9	7	sw.
Ohio.....	66.0	+6.3	1.79	-1.84	T.	8	19	9	3	sw.
Pennsylvania.....	63.0	+5.7	2.49	-0.94	0.2	13	13	13	5	w.
New York.....	62.0	+6.9	2.21	-1.09	0.7	8	18	9	4	s.
Vermont.....	61.9	+6.8	1.47	-1.71	0.7	7	16	9	6	w.

## TEMPERATURE.

The mean monthly temperatures exceeded their normals by more than  $6^{\circ}$  over the entire region south of the Lakes, in the Champlain Valley, and in the Canadian

Provinces of Ontario and Quebec, decreasing gradually to the eastward and northwestward of these sections. Only a few departures of less than  $+3^{\circ}$  occurred, and these were chiefly at stations on the immediate shore of Lake Superior.

The month opened with an atmospheric depression of considerable intensity central on the western shore of lower Michigan. The temperatures, as a consequence, were from  $12^{\circ}$  to  $16^{\circ}$  below the normal over the northwestern sections, and above normal by about the same values over the extreme east. As the disturbance advanced rapidly across the Lake region and passed down the St. Lawrence Valley the cold weather overspread the entire district. During the 2d-5th, under the influence of the following field of high barometric pressure, which moved slowly around the western and southern borders of the Lake region, the lowest temperatures of the month occurred at practically all stations. While frosts or freezing temperatures were general during this period, the advancement of vegetation, although rapid in the warm spell at the close of the previous month, had not been sufficient to admit of serious damage.

A brief cool period occurred on the 13th-14th, due to an area of high pressure moving southeastward across northern Michigan, and light to heavy frosts were reported as far south as the latitude of Detroit. With this exception, and that of a few cool days in the vicinity of western Lake Superior, the daily mean temperatures were above normal in practically all sections after the 6th. Waves of pronounced heat advanced eastward across the district on the 11th-12th, 16th-23d, and 25th-28th, and during these periods many prostrations and some deaths as a result of the hot weather were reported over the regions most affected. The highest temperatures of the month occurred at the culmination of the second of the hot waves over the Lake Superior, New York, and Vermont sections, but in the remaining portions of the district the greatest heat was experienced in the period 25th-28th.

Two stations in Ohio recorded maximums of  $100^{\circ}$ , while temperatures of from  $95^{\circ}$  to  $99^{\circ}$  occurred at numerous stations from Indiana and lower Michigan to New York State, and readings of  $90^{\circ}$  or over were noted in all sections of the district, except that of Minnesota. The absolute range for the month was  $87^{\circ}$ , from  $13^{\circ}$  on the 2d, at Thomaston, in the Upper Peninsula of Michigan, to  $100^{\circ}$ , at Montpelier and Findlay, Ohio, on the 27th and 28th, respectively. The mean daily range for the district as a whole was  $20.2^{\circ}$ , but reached an average of  $26.1^{\circ}$  in the Champlain watershed.

## PRECIPITATION.

The rainfall of the month was heavy at a number of places on the northwestern shore of lower Michigan, where several stations received amounts of from 7 to nearly 12

inches. Over the northern half of the Southern Peninsula of Michigan, in the Fox River Valley of Wisconsin, and over the Lake Superior sections, the precipitation was in excess of the normal, while throughout the southern and eastern portions of the district deficiencies amounting to between 1 and 2 inches were general.

There were four periods of widespread precipitation: 1st-3d, when snow fell in many localities; the 8th-11th, 15th-24th, and the 30th-31st. Throughout all these periods thunderstorms were frequent, and much damage occurred in localities. The showers over the eastern sections were generally light, but the electrical energy of many of the storms was quite severe, and several cases of loss of life were reported.

#### MISCELLANEOUS.

*Fog.*—Dense fog was comparatively frequent on western Lake Superior, occurring on 11 days at Duluth. It was also reported on 5 days at Marquette, 4 at Houghton, and 2 at Sault Ste. Marie. The distribution on Lakes Michigan and Huron was peculiarly local, dense fog occurring on 5 days at Escanaba and 4 at Milwaukee, while at Green Bay there was only 1 day, and at Chicago and Grand Haven dense fog did not occur during the entire month. Off Port Huron the fogs of the 1st, 9th, and 16th greatly impeded navigation, while no fog occurred at Detroit, and the dates of occurrence at Alpena were the 9th, 16th, 17th, and 21st. Lake Erie was entirely free from fog at its shore stations, except at the

extreme eastern end, where it was recorded on 5 days. On Lake Ontario somewhat similar conditions obtained, no fog occurring at Rochester, while 11 days with fog were noted at Oswego.

An aurora was observed at Canton on the 30th, and haze occurred at this station frequently during the first half of the month.

#### TORNADO NEAR HOWARD CITY, MICH.

By C. F. SCHNEIDER, Section Director, Grand Rapids, Mich.

A tornado of limited extent and duration occurred in the northwestern part of Montcalm County, Mich., about 1.30 p. m., May 22, 1911. The storm's greatest violence was felt on the farm of Mr. Sidney Reynolds, about 2 miles southeast of Howard City, where a barn, granary, and chicken house were destroyed and fruit trees and fences blown over.

The storm was of true tornadic type, having a funnel-shaped cloud that alternately raised and lowered as it progressed. Its direction of movement was from southwest to northeast and the path of greatest destruction was about 150 feet wide.

On the northwest side of the storm's path the trees fell toward the south, while on the opposite side they were blown toward the north, an evidence of the rotary winds that accompany the true tornado.

About half a mile farther on the funnel cloud again dipped to earth for a moment but did little damage.

No lives were lost, but two persons were slightly injured. The property loss amounted to about \$1,150.

TABLE 1.—Climatological data for May, 1911. District No. 4, Lake region.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.			
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmeasured.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.			
<i>Minnesota.</i>																					
Cloquet.....	Carlton.....	800	40	51.3	+ 2.8	81	18	24	2	41	3.45	- 0.02	1.33	0.1	14	8	13	10	ne.		
Duluth.....	St. Louis.....	1,133	6	51.3	+ 2.8	81	18	24	2	41	3.45	- 0.02	1.33	0.1	14	8	13	10	ne.		
Floodwood.....	do.....	1,257	4	55.2	-	89	18	19	4	46	3.36	-	0.96	0	7	20	6	5	w.		
Stephens Mine.....	do.....	1,500	17	50.2	+ 2.8	80	19	28	21	35	4.70	+ 1.34	1.48	0	10	8	10	13	ne.		
Two Harbors.....	Lake.....	614	17	56.0	+ 5.7	89	18	22	47	48	2.55	- 1.10	0.95	0	6	14	14	3	w.		
Virginia.....	St. Louis.....	1,434	17	56.0	+ 5.7	89	18	22	47	48	2.55	- 1.10	0.95	0	6	14	14	3	Oliver Iron Mining Co.		
<i>Wisconsin.</i>																					
Appleton.....	Outagamie.....	795	10	62.8	+ 8.2	91	25	23	2	37	5.04	+ 1.51	0.93	4.0	11	17	9	5	s.		
Ashland.....	Ashland.....	647	20	55.0	+ 4.5	92	18	22	2	45	4.79	+ 1.49	1.95	0	9	16	5	10	ne.		
Bayfield.....	Bayfield.....	635	2	53.0	-	82	27	25	2	37	4.62	-	2.39	T.	13	13	8	10	ne.		
Cecil.....	Shawano.....	804	13	59.8	+ 6.0	88	26	18	2	44	3.09	+ 1.03	1.21	4.0	9	19	8	4	sw.		
Florence.....	Florence.....	1,293	20	57.3	+ 6.3	89	25	20	2	45	4.74	+ 0.98	0.81	1.0	13	13	8	10	nw.		
Fond du Lac.....	Fond du Lac.....	800	25	62.6	+ 6.5	89	25	24	4	43	5.36	-	2.12	2.40	T.	11	16	5	10	ne.	
Grand River Locks.....	Marquette.....	770	15	63.0	-	91	25	22	2	41	5.14	+ 0.40	1.15	T.	11	24	3	4	s.		
Brown.....	Brown.....	617	25	59.6	+ 5.1	88	25	22	2	34	5.72	+ 2.12	1.30	2.0	13	6	15	10	Jerry Parkinson.		
Iron River.....	Bayfield.....	1,096	2	57.0	-	96	17	24	4	59	4.19	-	1.92	0	10	21	2	8	Wm. O. Thiede.		
Keweenaw.....	Keweenaw.....	590	2	52.8	-	87	17	22	2	42	4.65	-	1.00	9.0	11	17	8	6	Sam Wheeler.		
Manitowoc.....	Manitowoc.....	616	60	55.6	+ 3.4	86	17	26	2	38	3.32	+ 0.56	0.90	T.	12	13	6	12	John W. Schmidt.		
Menasha.....	Winnebago.....	764	14	-	-	-	-	-	-	-	3.95	+ 1.00	0.87	2.0	11	20	6	5	Eugene S. Evans.		
Menomonee Falls.....	Waukesha.....	842	2	62.0	-	92	27	25	2	40	2.00	-	0.78	T.	8	20	5	6	Geo. W. Marshall.		
Milwaukee.....	Milwaukee.....	681	40	59.9	+ 6.3	94	27	31	2	42	1.82	-	1.60	0.84	T.	9	13	9	9	U. S. Weather Bureau.	
New London.....	Outagamie.....	762	15	61.0	+ 5.1	90	25	20	2	41	6.00	+ 1.91	1.70	10.0	10	11	8	12	August H. Pape.		
Oconto.....	Oconto.....	590	20	59.0	+ 4.9	88	27	19	2	38	5.74	+ 2.14	1.29	6.0	14	9	16	6	s.		
Oshkosh.....	Winnebago.....	744	23	60.6	+ 4.0	90	25	23	2	42	4.64	+ 0.88	1.00	T.	11	18 <sup>b</sup>	7 <sup>b</sup>	4 <sup>b</sup>	Wm. K. Smith.		
Pine River.....	Waushara.....	900	16	62.2	+ 5.6	92	26	23	2	40	5.65	+ 1.63	1.30	2.0	12	13	5	5	Evan Vincent.		
Plum Island.....	Door.....	588	3	50.6	-	73	28	26	4	30	5.61	-	0.95	6.0	11	10	8	13	Geo. H. Carpenter.		
Plymouth.....	Sheboygan.....	843	1	60.0	-	88	25	25	2	38	2.89	-	0.72	T.	12	15	6	6	Geo. C. Robinson.		
Port Washington.....	Ozaukee.....	713	18	57.2	+ 4.5	95	25	26	2	45	1.33	-	2.44	0.62	0.5	6	14	6	11	Panl O. Feldrappe.	
Racine.....	Racine.....	633	14	60.3	+ 5.3	96	25	26	2	44	2.38	-	0.49	0.66	T.	8	18	6	7	Richard C. Kann.	
Ripon.....	Fond du Lac.....	935	1	64.7	-	90	26	27	2	36	5.72	-	2.05	T.	10	16 <sup>a</sup>	9 <sup>a</sup>	5 <sup>a</sup>	Daniel Davis.		
Sheboygan.....	Sheboygan.....	831	12	57.4	+ 4.9	91	25	27	2	43	2.29	-	1.30	0.71	T.	11	15	3	3	Ripon College.	
Sturgeon Bay.....	Door.....	600	12	53.2	+ 4.4	86	17	22	3	42	5.69	-	1.48	9.0	12	13	8	10	Louis C. Meyer.		
Superior.....	Douglas.....	671	2	50.5	-	82	18	30	1	45	4.67	-	2.09	0	13	13	8	10	Adam N. Dier.		
Waupaca.....	Waupaca.....	857	18	61.3	+ 4.9	95	26	17	2	49	5.78	+ 1.64	1.05	3.0	15	11	8	12	Edward B. Banks.		
<i>Illinois.</i>																					
Chicago.....	Cook.....	824	41	65.9	+ 9.4	94	26	33	2	35	3.37	0.00	1.27	0.1	12	13	10	8	sw.	U. S. Weather Bureau.	
<i>Indiana.</i>																					
Auburn.....	Dekalb.....	874	15	61.4	+ 2.9	96	27	27	3 <sup>t</sup>	42	1.41	- 2.30	0.60	0	7	19	3	9	sw.	Mrs. Josie B. Kuhlman.	
Berne.....	Adams.....	849	2	67.2	-	99	27	31	3	41	1.37	-	0.39	0	10	17	11	3	sw.	Henry M. Reusser.	
Elkhart.....	Elkhart.....	801	9	69.2	-	94	27	32	3	44	2.06	-	0.78	0	7	26	3	2	sw.	Dr. Miles Medical Co.	
Fort Wayne.....	Allen.....	775	15	67.1	+ 6.9	99	27	30	5	41	2.46	-	1.22	0.88	T.	11	16	10	5	sw.	Orion E. Mohler.
Hammond.....	Lake.....	598	20	66.6	+ 8.5	98	26	27	2	47	2.54	-	1.50	1.63	0	5	12	11	6	sw.	Carson W. Whitney.
Howe.....	Lagrange.....	886	6	66.6	-	95	27	30	3 <sup>t</sup>	42	2.09	-	1.32	0	5	21	0	10	w.	James E. Zook.	
South Bend.....	St. Joseph.....	726	18	66.5	+ 6.9	94	27	30	2	34	1.70	-	2.10	0.76	T.	11	21	4	5	sw.	Henry H. Swaim.
Whiting.....	Lake.....	606	2	67.2	-	96	18	30	2	39	3.47	-	1.26	0	9	20	6	5	sw.	D. H. Boyd.	
<i>Michigan, Upper Peninsula.</i>																					
Baraga.....	Baraga.....	623	9	51.4	+ 1.2	83	27	19	12	33	5.50	+ 1.86	1.00	0	7	15	0	16	w.	D., S. S. & A. Ry.	
Bergland.....	Ontonagon.....	1,300	1	-	-	-	-	-	-	-	4.24	-	0.99	0	10	17 <sup>d</sup>	0	10 <sup>d</sup>	sw.	Frank McMonigal.	
Blaney.....	Schoolcraft.....	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dr. S. S. Hackwell.		
Calumet.....	Eoughton.....	1,246	23	63.5	+ 7.6	87	19	24	1	38	4.08	+ 0.75	0.97	T.	13	16	8	7	w.	E. S. Grilerson.	
Chatham.....	Alger.....	875	10	53.2	+ 6.0	88	27	16	3	46	2.62	-	0.44	0.55	1.2	14	8	9	n.	U. P. Experiment Sta.	
Deer Park.....	Luce.....	610	10	53.0	+ 7.3	91	27	21	3	48	1.20	-	2.53	0.80	0	3	14	2	15	w.	Mrs. Sara E. McGraw.
Detour.....	Chippewa.....	585	10	53.8	-	82	20	21	2	44	1.71	-	0.45	4.0	8	17 <sup>a</sup>	1 <sup>a</sup>	1 <sup>a</sup>	se.	G. C. Reed.	
Eagle Harbor.....	Keweenaw.....	622	12	53.0	+ 7.3	89	19	28	1 <sup>t</sup>	42	3.13	-	0.18	0.69	T.	15	7	15	9	w.	John Nolen.
Escanaba.....	Delta.....	612	38	52.5	+ 2.5	74	27	22	2	27	4.42	-	1.00	1.48	1.0	11	12	10	9	s.	U. S. Weather Bureau.
Grand Marais.....	Ontonagon.....	1,147	10	54.5	+ 4.6	60	26	17	4	51	4.14	+ 0.67	0.81	0.5	11	21	1	19	nw.	W. B. Hatfield.	
Green.....	Alger.....	610	10	48.5	+ 3.2	81	27	18	1	30	1.56	-	1.30	0.40	T.	9	14	6	11	w.	Mrs. Lena Trudell.
Houghton.....	Ontonagon.....	622	10	53.8	+ 4.6	92	18	27	2	41	3.96	+ 0.67	1.34	T.	12	10	11	10	w.	T. A. Green.	
Humboldt.....	Marquette.....	663	5	54.1	+ 4.6	88	20	20	2	39	0.98	+ 3.31	1.47	2.0	11	3	11	17	w.	U. S. Weather Bureau.	
Iron Mountain.....	Dickinson.....	1,636	14	56.2	+ 8.9	90	27	25	3	49	3.00	-	0.83	0	9	17	1	13	s.	D., S. S. & A. Ry.	
Iron River.....	Iron.....	1,111	10	59.0	+ 7.1	90	27	21	2	45	4.41	+ 1.13	1.22	T.	9	15	10	6	sw.	Chapin Mining Co.	
Ironwood.....	Gogebic.....	1,520	8	56.8	+ 8.3	90	25	19	2	48	2.46	-	0.55	0.56	T.	10	18	7	6	n.	Victor D. Laing.
Ishpeming.....	Marquette.....	1,536	11	57.0	+ 7.7	89	27	19	2	42	2.46	-	1.27	0.50	0.1	13	6	20	5	sw.	Prof. J. V. Brennan.
Ish Royale.....	Keweenaw.....	610	4	44.2	-	65	20	28	2	46	0	-	0	0	0	12	18	1	18	ne.	Clev'd Cliffs Iron Co.

TABLE 1.—Climatological data for May, 1911. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.					Precipitation in inches.					Sky.	Prevailing direction.	Observers.				
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.						
<i>Michigan Lower Peninsula—Continued.</i>																				
Ann Arbor.	Washtenaw.	930	31	65.2	+ 7.6	95	27	29	2	38	1.05	- 2.66	0.46	0	7	18	10	3	sw.	
Arbela.	Tuscola.	728	15	63.2	+ 6.3	92	27	25	3	39	3.19	- 0.82	0.84	0	8	7	16	8	sw.	
Battle Creek.	Calhoun.	822	27	66.6	+ 7.1	95	27	30	3	38	1.32	- 1.77	0.55	0	7	18	7	6	sw.	
Bay City.	Bay.	593	15	62.6	+ 5.3	96	27	27	3	36	1.00	+ 1.67	2.00	T.	9	22	6	3	sw.	
Benzonia.	Benzie.	832	15	58.8	+ 6.6	87	27	26	2	35	10.39	+ 7.34	2.04	T.	12	13	10	8	sw.	
Berlin.	St. Clair.	22	02.1	+ 6.8	92	26	24	3	35	4.51	- 1.41	0.71	T.	11	13	8	7	sw.		
Big Rapids.	Mecosta.	906	15	61.2	+ 5.8	93	26	24	3	37	4.2	3.61	+ 0.73	0.71	T.	13	16	8	7	sw.
Bloomington.	Van Buren.	7	64.7	-----	94	27	30	5	38	3.58	-----	1.08	0.80	T.	6	24	2	5	sw.	
Cadillac.	Wexford.	1,293	2	60.8	-----	92	26	22	1	38	4.12	-----	0.80	0	12	17	11	3	s.	
Cassopolis.	Cass.	903	10	65.5	+ 6.5	95	27	30	3	34	2.50	- 1.45	0.90	T.	3	24	0	7	nw.	
Charlevoix.	Charlevoix.	610	33	56.6	+ 4.6	92	27	22	3	37	4.90	+ 2.28	0.70	T.	9	15	9	7	w.	
Charlotte.	Eaton.	7	63.6	-----	91	27	27	4	38	0.64	-----	0.36	T.	4	24	5	2	sw.		
Cheboygan.	Cheboygan.	611	21	55.6*	+ 5.0	92	27	21	3	45	6.17	+ 3.15	2.23	2.00	9	8	16	7	e.	
Clinton.	Lenawee.	830	21	64.7	+ 6.6	99	27	27	4	49	3.14	+ 0.99	1.11	0	7	17	13	1	sw.	
Coldwater.	Branch.	984	14	66.8	+ 7.9	96	27	30	2	38	1.88	- 2.23	0.86	0	7	25	5	1	s.	
Concord.	Jackson.	6	65.0	-----	97	27	26	3	39	1.94	-----	0.68	0	4	16	14	1	nw.		
Croton.	Newaygo.	685	3	63.1	-----	88	19†	27	3	41	5.69	-----	1.76	T.	8	9	17	5	sw.	
Detroit.	Wayne.	730	40	64.7	+ 6.8	92	28	30	3	34	1.78	- 1.49	0.47	0	12	16	12	3	s.	
Durand.	Shiawassee.	799	4	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
East Tawas.	Iosco.	590	14	55.8	+ 3.6	83	28	23	3	29	4.71	+ 2.31	1.00	0	9	19	8	4	se.	
Eloise.	Wayne.	640	14	65.5	+ 8.2	94	19†	31	2	42	1.51	- 1.25	0.56	0	8	19	9	3	sw.	
Flint.	Genesee.	730	22	63.2	+ 7.3	93	27	28	3	42	2.81	- 0.97	0.55	0	10	15	10	6	w.	
Frankfort.	Benzie.	559	7	54.8	-----	80	18	23	1	31	5.76	-----	1.34	1.34	8	19	0	12	s.	
Ganges.	Allegan.	665	2	62.5	-----	88	27	33	1	35	3.78	-----	1.18	T.	10	21	6	4	sw.	
Gaylor.	Otsego.	1,367	6	61.1	-----	90	27	25	1	37	-----	-----	0.2	0	18	0	13	sw.		
Gladwin.	Gladwin.	794	15	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Grand Haven.	Ottawa.	628	30	60.1	+ 5.3	87	27	31	1	28	3.40	+ 0.06	1.16	T.	10	16	11	4	s.	
Grand Rapids.	Kent.	707	22	64.6	+ 5.6	92	27	32	1	31	7.18	+ 3.84	3.22	T.	10	10	14	7	sw.	
Grape.	Monroe.	625	21	68.3	+ 8.3	97	28	28	3	43	2.50	- 2.40	0.40	0	6	16	14	6	w.	
Grass Lake.	Jackson.	989	5	63.8	-----	90	27	27	3	37	1.63	-----	0.65	0	5	20	1	10	sw.	
Grayling.	Crawford.	1,147	21	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Harbor Beach.	Huron.	635	23	57.5	+ 5.7	91	19	26	3	44	7.25	+ 4.32	3.00	0.5	7	17	8	6	s.	
Harrison.	Clare.	1,159	18	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Harrislake.	Alcona.	616	27	53.6	+ 3.2	83	11	21	3	37	5.75	+ 2.61	1.23	1.1	11	7	13	11	sw.	
Hart.	Oceana.	698	19	63.4	+ 8.7	92	27	28	2	34	11.61	+ 8.32	2.70	0	8	13	14	4	sw.	
Hayes.	Huron.	620	21	61.1	+ 6.5	94	27	28	3	36	4.11	+ 1.10	1.00	0	0	12	10	14	7	sw.
Highland.	Oakland.	830	19	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Hillsdale.	Hillsdale.	1,150	14	64.8	+ 7.4	94	27	28	3	43	1.59	- 2.88	0.64	T.	5	18	10	3	sw.	
Holland.	Ottawa.	610	5	60.4	-----	93	27	28	1	36	3.74	-----	1.04	T.	10	16	14	1	sw.	
Howell.	Livingston.	924	19	64.1	+ 7.6	94	27	25	3	43	2.05	- 1.18	0.40	0	9	19	9	3	sw.	
Ivan.	Kalkaska.	22	60.1	+ 7.1	90	26†	19	3	43	2.40	- 3.14	1.30	0.57	0	12	10	17	4	nw.	
Jackson.	Jackson.	927	14	66.5	+ 7.1	99	27	28	2	37	2.27	- 1.55	0.50	0	7	16	12	3	sw.	
Jedo.	St. Clair.	667	22	60.9	+ 6.2	92	27	29	2	38	3.16	- 0.13	0.87	0	10	15	11	5	sw.	
Kalamazoo.	Kalamazoo.	955	35	66.8	+ 8.6	93	27†	31	3	34	1.12	- 3.00	0.35	T.	6	8	22	1	sw.	
Lansing (Agr. College).	Ingham.	820	47	63.5	+ 5.6	93	27	27	3	36	2.67	- 0.62	1.22	T.	8	14	11	6	sw.	
Lansing (Capitol).	do.	881	24	64.8	+ 7.5	93	27	28	3	35	2.84	- 0.72	0.83	T.	10	14	7	10	sw.	
Lapeer.	Leelanau.	827	12	65.1	+ 9.0	96	27	27	3	40	3.28	+ 0.29	1.45	T.	9	15	13	3	sw.	
Ludington.	Mason.	586	13	57.4	+ 4.8	93	19	28	4	41	5.96	+ 3.61	1.73	0	10	17	8	6	sw.	
Luther.	Lake.	1,028	1	61.0	-----	93	28	20	4	47	4.45	-----	0.93	0	12	16	9	6	sw.	
Mackinaw.	Cheboygan.	592	15	53.8	+ 4.9	90	19†	28	2	45	3.94	+ 0.38	1.05	0	9	15	10	6	sw.	
Mancelona.	Antrim.	1,121	15	59.4	+ 6.8	94	26	18	3	42	5.20	+ 2.94	1.50	T.	9	21	4	1	sw.	
Manistee.	Manistee.	600	14	62.2	+ 9.4	93	28	29	14	41	-----	-----	-----	T.	-----	15d	8d	4d	sw.	
Midland.	Midland.	604	12	62.2d	+ 3.9	94	27†	26	3	38d	-----	-----	-----	T.	-----	16d	9d	3d	se.	
Morenci.	Lenawee.	811	4	67.1	-----	99	27	27	3	45	1.69	-----	0.68	0	8	14	13	14	sw.	
Mount Clemens.	Macomb.	615	11	60.5	+ 4.7	96	28	20	3	51	2.71	+ 0.07	1.00	0	7	12	8	11	se.	
Mount Pleasant.	Isabella.	826	12	-----	-----	91	27	27	1	37	1.91	- 0.73	0.70	0	5	17	5	9	w.	
Muskegon.	Muskegon.	587	15	60.3	+ 4.6	87	19†	30	2	37	3.30	- 0.79	1.10	T.	6	13	6	2	sw.	
Old Mission.	Grand Traverse.	858	17	56.8	+ 3.6	88	27	24	3	35	7.80	+ 4.79	1.40	1.0	1	9	16	6	n.	
Olivet.	Eaton.	934	21	63.8	+ 7.2	90	27	28	2	32	2.72	- 1.34	1.23	1.0	0	9	23	4	w.	
Omer.	Arenac.	616	12	60.4	+ 7.7	92	20†	30	3	34	3.25	+ 0.79	0.80	0	9	3	11	17	nw.	
Onaway.	Presque Isle.	826	8	55.7	+ 2.3	93	27	20	2	44	4.20	+ 1.13	1.00	0	7	17	0	14	sw.	
Owasso.	Shiawassee.	731	14	65.2*	+ 5.9	95	27	25	3	38	3.48	+ 0.52	1.37	0	7	16	3	6	sw.	
Petrosky.	Emmet.	660	21	57.0	+ 6.6	92	19†	26	4	50	2.70	- 0.24	1.00	1.0	0	9	10	3	sw.	
Plymouth.	Wayne.	725	14	64.1*	+ 6.6	98	27	21	4	46†	2.45	-----	0.93	0	0	17b	7b	3b	sw.	
Pontiac.	Oakland.	935	11	64.8	+ 8.1	95	27	30	3	35	1.75	- 1.96	0.55	0	5	28	3	10	sw.	
Port Austin.	Huron.	618	14	-----	-----	92	27	28	3	34	2.10	- 1.14	0.80	T.	10	16	7	8	ne.	
Port Huron.	St. Clair.	639	36	60.8	+ 7.1	90	27	28	3	34	2.10	- 1.14	0.80	T.	10	10	6	6	sw.	
Reed City.	Osceola.	1,033	14	-----	-----	89	27	14	3	43	5.80	-----	1.18	0.1	12	9b	18b	2b	sw.	
Roscommon.	do.	1,141	7	57.0b	-----	89	27	31	3	39	1.44	- 1.98								

TABLE 1.—Climatological data for May, 1911. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.					Precipitation, in inches.					Sky.				Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmeasured.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	
<b>Ohio—Continued.</b>																			
Findlay.	Hancock.	776	22	67.4	+ 7.0	100	28	29	3†	45	0.53	- 3.23	0.13	0	6	27	1	3	sw.
Fromont.	Sandusky.	628	9	67.7	-	95	26†	31	3	42	1.70	- 1.70	0.56	0	10	23	7	1	sw.
Hedges.	Paulding.	725	17	67.0	+ 7.0	99	28	28	3	42	1.46	- 1.70	0.60	0	5	22	8	1	w.
Hillhouse.	Lake.	638	4	68.4	+ 6.5	92	28	27	3	33	2.10	- 2.45	0.55	0	7	22	7	2	w.
Hiram.	Portage.	1,260	31	65.6	+ 7.5	93	28	30	3	33	2.73	- 1.17	0.69	T.	7	15	13	3	sw.
Hudson.	Summit.	1,153	50	65.4	+ 5.7	97	19	28	3	43	1.79	- 1.39	0.66	0	9	27	2	2	s.
Lima.	Allen.	875	12	66.2	+ 5.8	95	26	30	3	35	0.87	- 2.93	0.52	T.	9	19	5	2	w.
Medina.	Medina.	944	23	64.8	+ 5.1	97	28	28	5	49	2.05	- 1.41	0.62	T.	9	26	2	3	n.
Montpelier.	Williams.	880	19	66.2	+ 7.4	100	27	28	3	43	2.43	- 1.87	0.80	0	9	23	5	3	w.
Napoleon.	Henry.	680	24	66.9	+ 6.9	95	27†	31	3	39	2.10	- 1.37	0.60	0	9	23	6	2	w.
New Bremen.	Auglaize.	1,038	18	68.3	+ 4.7	96	27†	31	3	37	1.78	- 1.18	1.10	0	5	13	16	2	w.
North Royalton.	Cuyahoga.	1,000	18	64.3	+ 5.7	93	23	28	3	37	2.81	- 1.12	0.79	0	6	23	7	2	w.
Norwalk.	Huron.	719	25	66.5	+ 6.4	98	23	30	3†	53	0.70	- 2.40	0.17	0	7	21	5	5	w.
Oberlin.	Lorain.	855	36	65.2	+ 6.4	95	23	29	3†	43	1.45	- 2.11	0.54	0	5	21	8	2	sw.
Ottawa.	Putnam.	720	16	66.1	+ 5.1	95	27	30	3†	40	1.61	- 1.99	0.84	0	8	25	3	3	w.
Sandusky.	Erie.	629	34	65.8	+ 6.6	91	19	28	3	34	1.72	- 1.53	0.54	T.	11	16	12	3	sw.
Tiffin.	Seneca.	775	29	67.0	+ 6.8	94	28	32	2	36	2.78	- 0.96	1.52	T.	8	21	9	1	sw.
Toledo (1).	Lucas.	768	7	67.4	+ 7.7	95	28	33	2	35	1.63	- 1.64	0.68	0	10	20	10	1	sw.
Toledo (2).	do.	604	68.0	96	28	32	2	29	1	41	0.66	0	8	25	5	1	sw.		
Upper Sandusky.	Wyandot.	854	28	66.4	+ 5.8	94	26†	30	2	38	2.10	- 1.86	0.60	T.	8	12	15	4	w.
Vickery.	Sandusky.	588	18	66.0	+ 6.4	94	27	30	3†	43	1.79	- 1.72	1.01	0	7	13	3	3	sw.
Wauseon.	Fulton.	780	39	66.4	+ 7.5	97	27	28	3	43	0.83	- 3.30	0.25	T.	12	18	10	3	sw.
Willoughby.	Lake.	649	17	.....	.....	.....	.....	.....	3	23	2.32	- 0.29	1.09	0	9	23	4	4	sw.
<b>Pennsylvania.</b>																			
Erie.	Erie.	658	38	63.0	+ 5.7	90	28	32	2	32	2.49	- 0.94	0.79	0.2	13	13	13	5	w.
<b>New York.</b>																			
Adams Center.	Jefferson.	540	20	63.8	+ 9.8	90	23†	28	3	37	0.92	- 2.53	0.48	T.	6	17	12	2	sw.
Angelica.	Allegany.	1,340	28	59.7	+ 4.9	90	22	19	4†	47	2.31	- 1.47	0.62	T.	11	12	9	10	w.
Appleton.	Niagara.	270	20	60.4	+ 5.5	95	28	29	4	42	1.46	- 1.70	0.50	T.	7	18	11	2	sw.
Avon.	Cayuga.	715	42	64.5	+ 7.8	95	22	25	3	37	1.89	- 1.58	0.56	T.	8	24	6	1	n.
Blue Mountain Lake.	Livingston.	585	16	63.6	+ 6.2	95	20†	28	3	42	2.89	+ 0.26	1.23	0	7	21	7	3	-----
Brockport.	Hamilton.	1,750	11	.....	.....	.....	.....	.....	3	42	2.50	- 2.06	0.52	1.0	7	26	4	1	w.
Buffalo.	Monroe.	537	15	64.0	+ 7.8	94	20	27	3	34	1.61	- 1.33	0.47	1.0	14	15	2	2	w.
Canton.	Erie.	707	60	60.4	+ 5.9	94	23	29	3	39	2.30	- 1.80	0.52	T.	9	12	13	6	sw.
Cape Vincent.	St. Lawrence.	448	17	61.8	+ 5.6	93	23	28	3	38	2.99	+ 0.14	1.00	0.2	13	16	8	7	s.
Carver Falls.	Washington.	243	13	61.9	+ 6.8	94	23	26	4	47	2.28	- 0.45	0.85	0	8	14	10	7	s.
Chazy.	Clinton.	151	11	63.8	+ 9.0	94	28	27	4	43	0.40	- 2.58	0.35	0	2	25	4	1	s.
Dannemora.	do.	1,490	6	62.8	.....	94	21	26	3†	37	2.13	.....	0.62	T.	5	16	7	8	s.
Elba.	Genesee.	500	12	62.0	+ 6.9	92	20†	24	3	38	2.06	- 0.99	0.60	0.1	8	20	6	6	sw.
Fayetteville.	Onondaga.	530	10	66.0	+ 7.7	96	21	28	4†	42	2.35	- 0.65	0.77	0.5	11	20	5	6	nw.
Faust.	Franklin.	1,550	6	59.8	.....	92	22	23	3†	45	4.04	.....	1.03	0.30	10	10	11	7	-----
Gabriels.	do.	1,729	9	59.4	.....	94	21	19	4	49	2.95	.....	1.00	0.30	10	16	11	4	-----
Harkness.	Clinton.	622	9	62.7	+ 7.1	94	28	25	4	42	0.95	- 1.40	0.53	0	6	26	4	1	s.
Hemlock Lake.	Livingston.	900	13	62.8	+ 6.3	90	22	28	3	33	2.35	- 0.33	0.83	0	5	20	6	5	nw.
Hunt.	do.	1,321	12	63.6	+ 7.0	98	22	26	3	44	3.15	- 0.51	1.58	0	6	20	8	3	sw.
Ithaca.	Tompkins.	928	33	64.5	+ 7.5	96	22	28	4	39	2.24	- 1.19	1.10	0.1	7	16	9	6	nw.
Keene Valley.	Essex.	1,000	13	62.4	+ 8.9	99	21	21	4	51	1.17	- 2.01	0.23	0.2	10	21	8	3	s.
King Ferry.	Cayuga.	11	.....	.....	.....	.....	.....	1	36	1.36	- 1.57	0.60	0	8	24	5	2	nw.	
Lake George.	Warren.	350	14	64.0	+ 8.2	96	22	26	4	44	1.22	- 1.80	0.48	0	7	19	11	1	s.
Lake Placid Club.	Essex.	1,864	3	55.5	.....	86	28	17	4	44	3.19	.....	0.71	9.0	12	16	11	4	w.
Lo Roy.	Genesee.	920	21	63.8	+ 6.2	93	23	27	3	37	2.27	- 1.02	0.52	T.	10	15	9	9	nw.
Lockport.	Niagara.	650	24	62.0	+ 5.1	91	20†	27	3	45	2.08	- 0.76	1.00	0.2	8	21	2	8	sw.
Lowville.	Lewis.	900	44	61.3	+ 6.9	92	21†	25	4	48	4.33	+ 1.44	2.00	0	5	18	9	5	w.
Moira.	Franklin.	200	11	63.8	+ 8.8	94	21	29	3†	44	2.04	- 1.09	1.09	0.5	5	21	7	3	w.
Nehasane.	Herkimer.	1,750	3	57.3	.....	91	22	16	4	50	5.25	.....	1.50	0	11	21	7	3	w.
North Lake.	St. Lawrence.	1,822	10	62.2	+ 5.7	93	23†	29	4	36	2.10	- 0.77	0.78	T.	7	12	16	3	s.
Ogdensburg.	St. Lawrence.	175	27	62.2	+ 5.7	93	23	29	4	36	2.17	.....	0.81	0	9	11	14	6	w.
Old Forge.	Herkimer.	1,733	3	58.6	.....	92	23	20	4	45	3.17	.....	0.81	0	8	15	11	5	sw.
Oswego.	Oswego.	335	11	59.4	+ 4.7	91	28	30	4	35	1.80	- 1.05	0.67	T.	8	22	4	5	sw.
Otto.	Cattaraugus.	1,410	7	64.0	.....	90	22	25	3†	38	1.34	.....	0.29	0	5	20	12	5	sw.
Palermo.	Oswego.	460	52	.....	.....	.....	.....	1	31	1.31	- 1.38	0.80	0.3	6	24	5	2	sw.	
Perry City.	Schuyler.	1,038	5	62.5	+ 6.8	94	22†	23	4†	45	2.16	- 1.08	0.76	0.2	7	17	9	5	nw.
Philadelphia.	Jefferson.	485	3	63.0	.....	92	23	27	3	37	3.61	.....	0.95	T.	12	13	14	4	w.
Potsdam.	Jefferson.	300	35	62.6	+ 7.5	98	23	17	3†	46	1.34	- 1.83	0.85	0	9	19	10	2	sw.
Raquette Lake.	Hamilton.	35	37.6	63.6	+ 7.5	98	23	22	3	48	3.55	.....	0.85	0	9	19	3	9	sw.
Rochester.	Monroe.	523	82	63.7	+ 7.0	93	28	27	3	29	2.10	- 0.84	0.62	2.0	10	16	12	3	w.
Romulus.	Seneca.	719	19	.....	.....	.....	.....	1	36	1.88	- 1.89	0.66	0.5	12	18	12	1	nw.	
Shortsville.	Ontario.	740	12	63.5	+ 7.4	90	22†	28	3†	35	1.99	- 0.68	0.86	0	7	19	10	2	nw.
Skaneateles.	On																		

TABLE 2.—*Daily precipitation for May, 1911. District No. 4, Lake region.*

TABLE 2.—*Daily precipitation for May, 1911. District No. 4—Continued.*

TABLE 2.—*Daily precipitation for May, 1911. District No. 4—Continued.*

Stations.	River basins.	Day of month.																														Total.								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31								
<i>Ohio—Continued.</i>																																								
New Bremen	Maumee																																	1.78						
North Royalton	Lake	.24																																.59	2.81					
Norwalk [1]	do	.10	.09																															.08	.70					
Oberlin	do	.29	T.																															.54	1.45					
Ottawa	Maumee	T.	.30																																.84	1.61				
Sandusky	Lake	.14	T.																																.43	1.72				
Tiffin	Sandusky	.15	T.																																.53	2.78				
Toledo (1)	Maumee	.28																																		.68	1.63			
Toledo (2)	do	.50	.02																																	.06	1.41			
Upper Sandusky	Sandusky	.50		T.																																.60	2.10			
Vickery	Lake	.01																																		.37	1.79			
Wauseon [1]	Maumee	.03	.02	T.																																.02	0.83			
Willoughby	Lake	.43	.04																																			1.09	2.32	
<i>Pennsylvania.</i>																																								
Erie	Lake	.79	.02																																			.33	2.49	
<i>New York.</i>																																								
Adams Center	L. Ontario	.07	T.	T.	T.																																	.05	0.92	
Angelica	Genesee	.28	T.	T.	T.																																	.62	2.31	
Appleton	L. Ontario	.50	T.	T.	T.																																	.35	1.46	
Auburn	Oswego	.50	T.	.06																																		.55	1.89	
Avon	Genesee	.32																																				.94	2.89	
Blue Mountain Lake	Raquette	.43	.10																																			.37	2.50	
Brockport	L. Ontario	.27	.02	.10																																		.47	1.61	
Buffalo	Lake Erie	.52	T.	T.																																		.22	1.30	
Canton	Grass	.99	.03	.02																																		.32	2.99	
Cape Vincent	St. Lawrence	.18	.78																																			.15	3.71	
Carvers Falls	L.Champlain	.18	.45																																			.85	2.28	
Chazy	do	T.																																				.40	1.40	
Dannemora	do	.17	.50	T.																																		.21	1.23	
Elba	L. Ontario	.60	T.	.01																																		.40	2.06	
Faust	Raquette	.46	.73	.30	.03																																	.44	4.04	
Fayetteville	Oswego	.14	.38	.04																																		.77	2.35	
Gabriels	St. Regis	.16	.50	.15	.07																																	.7	2.95	
Harkness	L.Champlain	.02	.53	.04																																		.05	0.95	
Hemlock Lake	Genesee	.23																																					.83	2.35
Horse Shoe	St. Lawrence	.33	.32	.38	.51																																	.5	3.63	
Hunt	Genesee	.47																																					.57	3.15
Ithaca	Oswego	.1.10	T.	.01																																		.64	2.24	
Keene Valley	Ausable	.09	.14	.23	.11																																	.05	1.17	
King Ferry	Oswego	.44	.16																																			.49	1.36	
Lake George	L.Champlain	T.	.48																																			.15	1.22	
Lake Placid Club	Ausable,W.	.25	.56	.33	.25																																	.10	3.19	
Le Roy	Genesee	.22	.03	T.																																		.31	2.27	
Lockport	L. Ontario	.1.00	T.	.02																																		.48	2.08	
Lowville	Black	.20																																				.70	4.33	
Moirs	St. Lawrence	.1.09	.64	.05																																		.2	2.04	
Nehasane	Black	.65	.70	.10	.02																																	.5	2.25	
North Lake	St. Lawrence	.50	.26	T.																																		.2	2.10	
Ogdensburg	Black	.35	.49	.13																																		.67	1.50	
Old Forge	L. Ontario	.11	T.	T.																																		.24	1.34	
Oswego	Lake Erie	.29	.06	T.																																		.80	1.31	
Otto	Raquette	.1.07		.02																																		.75	2.16	
Palermo	St. Lawrence	.29	.37	.01																																		.12	3.61	
Perry City	Raquette	.																																						

TABLE 3.—Maximum and minimum temperatures for May, 1911. District No. 4, Lake region.

Date.	Duluth, Minn.		Wisconsin.						Chicago, Ill.		Fort Wayne, Ind.		Michigan, upper peninsula.								Michigan, lower peninsula.								
			Florence.		Green Bay.		Milwaukee.						Escanaba.		Ewen.		Houghton.		Marquette.		Sault Ste. Marie.		Alpena.		Battle Creek.		Cadillac.		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1....	36	28	34	25	38	26	36	33	43	37	71	40	35	25	31	25	34	27	33	28	38	24	43	28	64	38	60	22	
2....	50	24	42	20	43	22	41	31	44	33	52	33	39	22	44	18	41	27	31	25	29	22	34	26	46	30	35	25	
3....	55	31	52	20	54	30	56	35	59	37	57	31	46	25	50	25	48	28	42	25	42	24	47	22	60	30	49	22	
4....	65	33	59	21	61	33	49	40	54	44	63	35	51	31	60	17	59	30	54	34	48	30	55	28	60	30	54	26	
5....	69	50	72	27	69	37	60	42	63	44	68	30	57	34	71	23	68	43	59	44	63	31	69	34	65	30	67	33	
6....	71	49	74	44	70	43	64	47	68	51	74	35	58	41	72	46	73	42	77	47	71	35	75	39	71	35	70	44	
7....	73	48	80	42	76	49	76	51	77	55	78	39	63	44	80	38	82	46	83	53	73	38	77	45	75	40	70	48	
8....	75	45	77	51	65	53	73	55	77	58	82	42	58	47	73	40	73	45	61	48	62	40	73	50	80	49	71	45	
9....	71	41	80	39	73	50	62	44	71	60	84	58	60	44	82	33	83	43	72	41	77	36	64	43	81	60	73	43	
10....	52	38	71	50	74	52	83	50	87	52	89	59	58	47	72	45	65	43	73	40	62	47	52	44	84	60	76	53	
11....	50	32	67	48	73	55	74	58	74	61	83	63	73	46	63	33	63	37	70	53	68	52	81	47	79	64	71	62	
12....	56	31	60	35	59	40	64	43	76	52	84	60	60	37	62	33	44	23	56	35	53	34	66	36	72	54	65	42	
13....	48	30	65	25	61	35	53	40	58	47	71	41	47	31	54	35	60	29	64	33	59	33	50	31	69	38	67	30	
14....	62	44	68	41	71	45	64	44	72	53	59	41	56	41	55	38	70	43	71	46	62	37	54	43	73	45	67	45	
15....	58	42	72	52	69	52	76	50	86	64	89	48	67	46	72	21	66	44	67	44	65	42	68	54	86	53	73	54	
16....	45	39	55	48	66	51	67	50	89	69	91	57	52	46	65	45	45	41	51	38	54	47	57	42	86	62	68	58	
17....	61	40	86	49	84	52	88	61	90	70	93	59	66	46	85	57	80	43	73	50	67	50	64	45	89	63	82	62	
18....	81	40	82	58	86	60	88	68	92	72	94	65	68	54	87	64	92	51	84	60	91	49	81	52	91	68	82	61	
19....	78	56	84	63	88	64	90	69	91	74	94	65	67	53	84	55	90	60	91	54	87	55	87	54	91	67	84	59	
20....	70	52	77	60	80	63	76	53	83	61	90	70	70	52	74	57	73	54	68	53	80	57	85	58	88	69	83	65	
Mns.	61.5	41.2	69.8	44.8	69.9	49.3	69.3	50.5	74.5	57.4	82.1	52.1	60.3	44.7	68.2	40.8	65.1	42.6	84.4	43.9	63.9	42.0	65.6	44.7	78.6	54.6	71.7	49.9	
Michigan, lower peninsula.						Ohio.						Erie, Pa.						New York.						Vermont.					
Date.	Detroit.		Muskegon.		Saginaw, West Side.		Cleveland.		Lima.		Sandusky.		Toledo.		Buffalo.		Canton.		Rochester.		Syracuse.		Burling- ton.		Northfield.				
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
	68	34	53	33	66	35	71	38	69	43	72	40	70	35	70	38	66	41	66	57	69	48	75	56	70	58	68	56	
1....	42	32	39	30	40	28	40	34	47	32	43	35	46	33	38	32	41	31	34	48	32	56	31	60	35	60	34	29	
3....	53	30	48	31	53	26	49	35	51	30	51	33	55	34	44	35	40	29	34	26	39	36	37	30	47	29	29		
4....	57	38	50	32	53	31	51	41	60	33	55	38	58	41	50	38	45	35	52	29	51	30	49	31	50	29	47		
5....	64	40	56	32	68	33	57	38	62	49	59	39	65	42	55	36	48	39	60	34	59	37	64	36	61	27			
6....	68	48	60	34	73	39	62	41	68	37	64	43	70	49	61	43	53	45	68	42	70	47	67	47	70	39	68	29	
7....	75	52	69	46	76	44	69	46	73	41	71	50	76	51	60	48	60	52	72	47	74	72	52	78	50	76	37		
8....	78	57	66	48	80	50	74	52	77	44	74	56	80	58	71	50	52	76	49	77	49	76	52	82	50	81	36		
9....	74	58	68	49	78	56	71	59	80	62	75	60	80	62	70	56	62	49	76	48	74	53	69	54	74	47			
10....	75	57	79	54	80	54	84	61	85	65	88	60	85	59	76	58	72	51	68	48	73	52	65	48	67	40			
11....	81	60	74	56	77	61	83	63	88	60	85	63	82	64	85	60	72	52	85	57	89	61	90	63	87	48			
12....	77	46	60	50	71	53	77	47	75	59	78	52	80	50	74	49	66	48	75	59	76	48	76	63	82	53			
13....	58	41	55	38	64	36	54	45	76	44	53	46	61	43	62	43	50	50	39	61	44	62	43	67	45				
14....	65	45	69	50	68	41	65	47	72	40	59	50	61	49	61	44	71	42	71	35	68	41	70	38	70	30			
15....	83	53	76	51	80	53	85	50	86	52	86	53	76	53	67	53	75	48	81	56	81	58	73	50	76	38			
16....	77	61	70	58	71	58	78	63	88	60	84	62	87	66	72	56	67	54	61	46	63	51	70	53	65	38			
17....	85	61	81	59	82	57	84	58	87	61	88	58	88	60	74	52	68	52	76	38	73	51	75	39					
18....	86	67	82	62	90	63	86	68	90	65	89	65	90	68	81	68	72	58	81	59	84	64	83	65	78	50			
19....	88	67	87	68	92	68	88	67	91	66	91	69	90	69	88	71	85	70	77	64	84	66	84	69	80	61	75		
20....	87	68	82	55	89	60	89	65	88	69	91	68	87	71	86	71	88	70	87	67	92	71	88	66	88	65	84		
21....	83	64	87	64	85	65	86	63	86	65	88	66	87	68	88	69	84	63	89	70	88	73	92	68	92	58			
22....	86	64	74	61	89	68	87	67	85	65	81	68	87	69	86	67	94	68	86	69	88	73	92	68	92	59			
23....	79	63	68	58	81	60	79	66	83	65	83	64	82	65	78	65	73	63	83	65	85	63	92	66	82	55			
2																													